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ABSTRACT

This paper examines developments at 26 universities to identify patterns and models of telecommunications information planning and decision-making. The study was designed to determine how telecommunications information (TI) policy questions are resolved on university campuses, and by whom. An important aspect of the study was to determine the role of the library and university computing facilities in the formation of TI policy. To gather data for analysis, researchers surveyed 36 universities with local area networks (LANs), whether operational or planned, as listed in the 1985 Automation Inventory of Research Libraries; 26 responded. Seeking to identify the centers of decision-making and to determine spheres of authority, the survey covered wiring, telephone systems, TI policy in general, and the relationship of the library to computing facilities. Data analysis led to the creation of four models of TI policy formation: (1) Academic Affairs Sphere Model; (2) Administrative Services Sphere Model; (3) Computing/Information Systems Sphere Model; and (4) Decentralized Model, which includes a committee-based model. Appendices include detailed survey results on the status of campus wiring and on wiring decisions, university organization charts, and a copy of the survey form. (THC)

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## Introduction

In this decade, institutions of higher education are facing unprecedented changes brought about by rapidly-developing information technologies. A growing number of academic institutions are taking a new look at their organizational structure, as they implement state-of-the-art telecommunications such as campus-wide local area networks. Some universities are reorganizing to take advantage of opportunities created by telecommunications advances, while others appear to be watching from a distance at best. This Occasional Paper investigates developments at 26 universities in the Spring of 1985 in order to identify patterns or models of telecommunications information planning and decision-making.

The focus of the study was to determine how Telecommunications Information (TI) Policy questions are resolved on university campuses, and by whom. Within this context, an important aspect was to determine the role of the library and university computing facilities in the formation of TI Policy.

## Methodology

For the purposes of this study, TI Policy was defined as:

> the plan or course of action adopted by a university, designed to influence and determine decisions and actions regarding the communication of information and knowledge via the transmission of signals, through voice, data, or video communication systems.

To gather appropriate data for analysis, researchers surveyed 36 universities in Spring 1985; 26 responded. Researchers selected the 36 institutions by identifying colleges or universities with local area networks (LANs), either operational or planned, as listed in **The Automation Inventory of Research Libraries** (OMS, 1985). The survey sought to identify the centers of decision-making -- that is, the individuals or offices in an organization where particular decisions are made. From this data, researchers determined spheres of authority -- broad ranges of authority in an organization, such as "administrative services" within the university, where these decision centers are located. Then, based on an analysis of these findings, researchers identified models of TI Policy decision-making.

The need for such a survey rose from a decision not to rely solely on university organization charts. The survey covered wiring, telephone systems, TI Policy in general, and the relationship of the library to computing facilities. Researchers anticipated that the analysis of responses to specific questions would give a truer picture of the locus of decisions, especially when these responses were compared to an organization chart and a university's spheres of authority.

TI Policy, as the term is used in this paper, was further defined by the survey questions (See Appendix 4). There was one question regarding the university's goals for staging information technology developments. Other questions dealt with wiring, including the status of voice, data, and video communication systems and the administrative positions responsible for making wiring decisions in planning, selection, and operating areas. A related question was included to determine if telephone policymaking and voice communication wiring decisions were made in the same sphere. The survey also asked the broad question:

> What position(s), office(s), or committee(s) is/are responsible for the formation of telecommunications information policy at your university?

And finally, the survey asked for information on the relationship between the library and the computing facilities at the university. Respondents were asked to provide university organization charts or to indicate to whom the respective policymakers report, and their place in the organization.

Each response was coded to indicate the sphere of authority to which it belonged, as determined from the descriptions and the organization charts provided. Evaluation of these assigned codes became the basis of analysis leading to the creation of four models of TI Policy formation: 1) Academic Affairs Sphere Model, 2) Administrative Services Sphere Model, 3) Computing/Information Systems Sphere Model, and 4) Decentralized Model, which includes a Committee-based Model.

## Summary of Key Findings

Where do academic libraries fit in the determination of TI Policy in universities? As the study results unfold, it becomes evident that:

- Libraries were not a sphere of authority in the formation of TI Policy similar to the spheres noted above.

- The majority of libraries in this survey were in the academic affairs sphere,which was the least favored as a center for TI Policy formation.

- Library involvement in TI Policy formation committees was limited: Only nine of the universities reported using committees, and of that nine, not all included library representation.

- While computing/information systems (C/IS) did appear to be a rising sphere of authority in universities, the relationship between libraries and computing facilities could be characterized as founded on practical needs, rather than on future possibilities

If these observations are valid for these 26 technological leaders in applying telecommunications, then what of other academic institutions? It may be that in the majority of universities, the library is beyond the periphery regarding TI Policy decisions, if indeed these institutions have even begun to tackle such issues.

While it appears that the C/IS sphere is on the rise, it is also important to consider the prevalence of decentralized models in the formation of TI Policy. Such widespread decentralization may well indicate a period of adjustment and transition for many academic institutions as they take on the technological challenges of this decade.

# I. Wiring the University Campus and Beyond

## A. University Goals for Staging Information Technology Developments

A university's aspirations for wiring the campus and beyond were gauged by asking the question:

> Which phrase best describes your university's goals for staging information technology developments?

Eleven responded "technological leader", three responded between "technological leader" and "early follower", ten responded "early follower", one responded as a "casual follower", and one responded in the "other" category.

Of the 11 considering themselves technological leaders, five have TI Policy formation in a decentralized configuration, two use the C/IS model, another two the administrative services model, and one the academic affairs model. (One was not able to be analyzed.) Four of the 11 noted the use of committees in the formation of TI Policy.

## B. The State of Campus Wiring

Seven universities were wired for voice, data, and video by the Spring of 1985. The other respondents were in various planning stages. At that time, four institutions appeared to have no plans for video wiring.

Only five of the 11 institutions considering themselves technological leaders were wired for all three communications components, and a sixth was wired for voice and data with a few building-to-building links for video. All the other technological leaders were in-process except one university which was in the planning stage for all three components.

By the end of 1986 ten more institutions are expected to be fully wired for voice, data, and video transmissions, an increase of 28 percent from the Spring of 1985. (See Appendix 1 for details.)

## C. Where Campus Wiring Decisions Are Made

Planning recommendations for wiring occurred in the computing/information systems sphere in five universities, in the academic affairs sphere in four universities, in the administrative services sphere in four universities, and in decentralized configurations in six universities, three of which were committee-based.

Selection decisions for wiring were made in the C/IS sphere in five universities, in the academic affairs sphere in four universities, in the

administrative services sphere in three universities, and in a decentralized configuration in four universities, one of which was committee-based.

Operating decisions for wiring occurred in the C/IS sphere in five universities, in the academic affairs sphere in four universities, in the administrative services sphere in three universities, and in a decentralized fashion in three universities. None were committee-based. (For details regarding wiring, see Appendix 2.)

Twelve universities indicated that all three decision areas for campus wiring (planning, selection, and operating) were within the same sphere. Of these 12, three were in the academic affairs sphere, two in administrative services, four in C/IS, and three were decentralized. None were committee-based.

## II. Positions Responsible for the Formation of Telecommunications Information Policy

Responses to the direct question of who is responsible for the formation of TI Policy were quite different from wiring decision responses. (See Bar Graphs.) The total number of responses to each question varied because of either lack of clarity or absence of a particular response.

A new sphere of authority, the C/IS sphere, may in fact be rising in visibility; but after examining the data, this sphere's decision-making responsibility does not appear to be following this rise at the same pace. While nine universities responded that the formation of TI Policy occurred in the C/IS sphere, only five universities stated that the C/IS sphere was responsible for each of the other areas.

The correlations between the responses to the direct TI Policy question and the responses concerning campus wiring were high for the planning decisions but lower for selection decisions and much lower for operating decisions. At ten universities, the same area was responsible for both the formation of TI Policy and for wiring planning decisions. Surprisingly, four universities indicated TI Policy formation was assumed by offices organizationally beneath those responsible for wiring planning decisions. In one instance, formation of TI Policy differed from all wiring decision areas -- wiring being in academic affairs and TI Policy formation in administrative services.

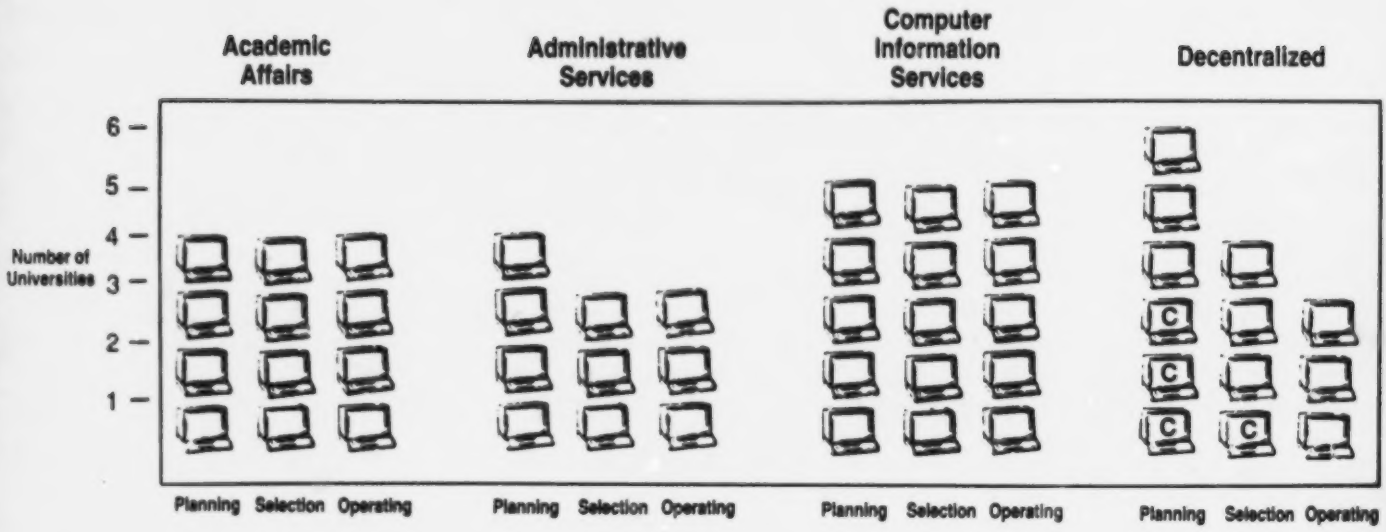
### A. Survey Responses Compared to University Organization Charts

The organization charts of responding universities might lead one to believe that 16 of the 26 have offices or individuals responsible for the formation of TI Policy. Five universities appear to have placed the formation of TI Policy under academic affairs, two under administrative services, and nine under C/IS. These conclusions are shortsighted, however, when the results from the survey are analyzed. While the C/IS sphere is, in fact, the predominant sphere, decentralized configurations are second, followed by administrative services and then academic affairs. Nine universities responded that the formation of TI Policy occurs in the C/IS sphere, two in academic affairs, five in administrative services, and six in decentralized configurations.

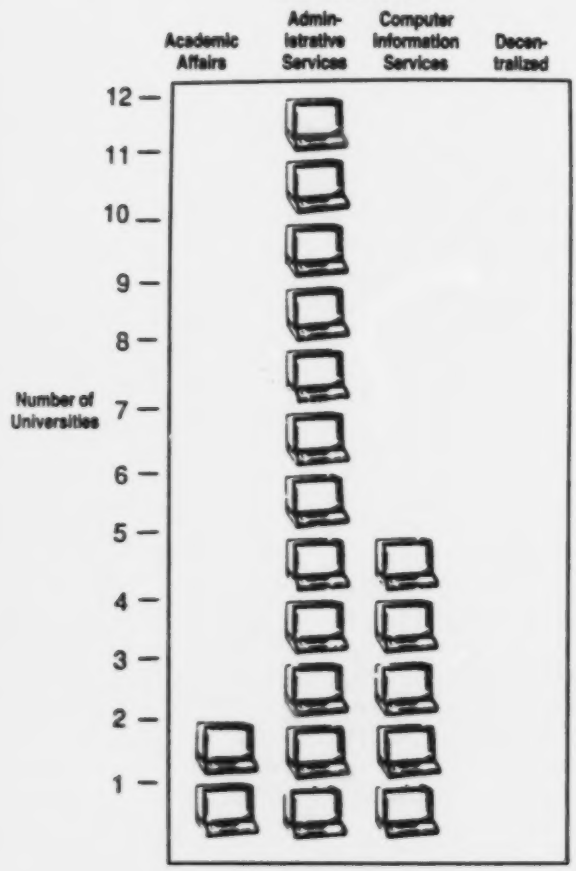
### B. Three Key Areas Intertwined: Administrative Services, Academic Affairs, Computing Facilities

The ties between the formation and execution of TI Policy and administrative services in a university are inherently strong because of university financial control systems. Also, university management information systems are typically in the administrative services sphere.

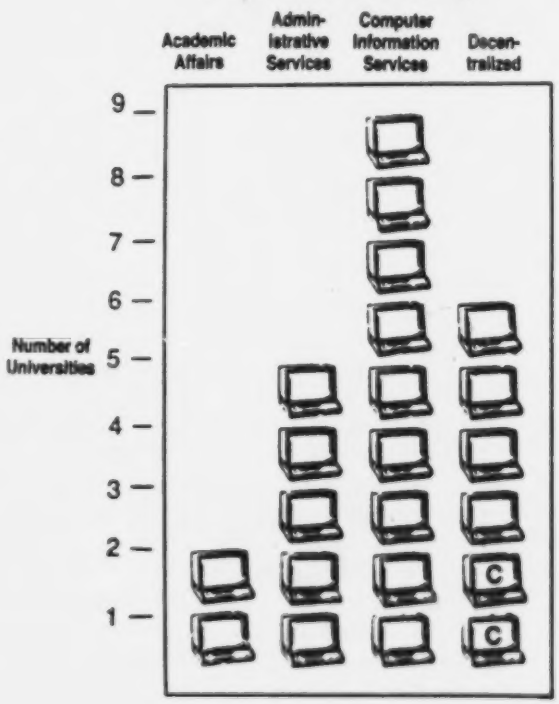
## CAMPUS WIRING DECISIONS




## TELEPHONE SYSTEM DECISIONS




## TELECOMMUNICATIONS INFORMATION POLICY DECISIONS




C = Committee Based

TI Policy is fundamentally tied to academic affairs, as the ultimate purpose of TI Policy is to serve the needs of the faculty and students. University computing facilities and the formation and execution of TI Policy also are functionally intertwined and evidently apparent to the designers of university organizations, as witnessed by the rise in C/IS visibility. The survey shows that computing facilities are often within the administrative services sphere, except where the C/IS sphere has been elevated to a parallel position in the university hierarchy.

## C. The Library and Computing Facilities

Of the 26 respondents to the survey, none indicated that the library and computing facilities were combined organizationally. (For a short time in 1985, the library at the Virginia Polytechnic Institute reported to VPI's Vice President for Computing and Information Systems who, in turn, reported to the Provost, but now the library reports directly to the Provost.) Several respondents, however, noted that both the library and the computing center reported to the Office of the Provost. The level of interaction between libraries and computing facilities varied considerably and for the most part was founded on practical grounds, such as the support needed for the library's online catalog, and not on future possibilities.

[In a development announced January 1, 1986, Columbia University, which was asked to participate in this study but which chose not to respond, reorganized the reporting relationship of its Vice President and University Librarian. That position has assumed overall administrative responsibility for all scholarly information services including the Center for Computing Activities, with the exception of administrative data processing which continues to report to the Office of the Executive Vice President for Academic Affairs. In accordance with the concept of scholarly information services, the university is developing a Scholarly Information Center.]

Of the universities participating in this study which perceived themselves as technological leaders, eight of 11 have an advanced level of interaction either existing or imminent between the library and the computing center. An advanced level of interaction is characterized by computer center assistance in operating the library's computer, plus library involvement in a local area network, typically as a node on the network and with informal links with programmers and systems staff.

At the Massachusetts Institute of Technology, the Director of Information Services is an ex officio member of the Committee on the Library System, and ad hoc links exist at the planning, selecting, and operating levels between the computing facilities and libraries. The University of British Columbia Library has a very close, long-standing working arrangement with the computing center. The library has a mainframe, located in and maintained by the computer center, and the library develops and maintains its own software. The computing center developed and maintains a campus data communications network, called UBCNet, which the library uses along with other campus users.

The University of California at San Diego noted that satellite links tie all UC campus libraries together. At Stanford, the libraries and the computing center, while organizationally separate, have a close working relationship regarding development and implementation of automated systems. The University of Pennsylvania response noted that in the past, there has been no need or way to work together. As a local area network is implemented, the library is working more closely with the computing facilities. Cooperation is anticipated at the administrative rather than the operational level.

Universities which considered themselves to be early followers indicated a less advanced level of interaction between the library and the computing center than technological leaders. Thus it might be concluded that one characteristic of a technologically advanced state on a university campus is a strong relationship of support and cooperation between the library and computing facilities. Such a relationship certainly can be accomplished without the library and the computing center becoming organizationally integrated. However, with cooperation between these two entities, the potential for innovation is high and the ability to solve problems jointly and introduce innovation is enhanced.

## III. Models of Organization for Determining Telecommunications Information Policy

Because policy and functional interrelationships involving TI Policy are intertwined among three spheres of authority, it can be difficult to discern clearly delineated models. However, after analysis of responses to the survey, four organizational models appear, incorporating three spheres of authority in a university. The spheres -- academic affairs, administrative services, and computing/information systems -- serve as the basis for three models. The absence of decision-making centralized in any one of these three spheres leads to decentralized models, including the committee-based model.

### A. Academic Affairs Centered Model

The academic affairs centered model is closest to the faculty in that it is centered in the office of the chief university officer for academic affairs, often the Provost or a Vice Chancellor. The model is characterized by a Vice Provost for Computing or Information Technology or a Vice Chancellor for Research in the key position of responsibility.

The formation of TI Policy at the University of Michigan is firmly centered in the university's academic affairs sphere with a Vice Provost for Information Technology. Four key areas involved in TI Policy formation report to this Vice Provost: 1) Director of Michigan's MERIT Network; 2) Office of Administrative Systems; to whom 3) the Office of Telecommunication Systems reports; and 4) the Computer Policy Committee.

The positions at Michigan responsible for making decisions related to wiring their university are:

Planning recommendations - Vice Provost for Information Technology

Selection decisions - Director of Telecommunications and Vice Provost for Information Technology

Operating decisions - Director of Telecommunications and Director of MERIT Network

Specific responsibility for the formation of TI Policy rests with: 1) Computer Policy Committee; 2) Office of Telecommunication Systems; 3) Vice Provost for Information Technology; and 4) Director of MERIT Network.

Positions responsible for policy formation and decision-making regarding the university's phone system are: 1) Vice Provost for Information Technology; 2) Director of Administrative Systems; 3) Director of MERIT Network; and 4) Director of Telecommunication Systems.

Michigan's response to the survey question regarding the relationship between the library and university computing facilities reveals that they operate separately and that there is joint use of the Michigan communications network. Thus while the library makes use of computing facilities, there are no formal links.

### B. Administrative Services Centered Model

The administrative services model is centered in those offices which are responsible for the business and financial management of the university, such as a Vice President for Administration. An Assistant Vice Chancellor for Business Services is an example of the key policy maker in this model.

Formation of TI Policy at the University of California at Santa Barbara is an example of an administrative services centered model. The Vice Chancellor for Administrative Services, with assistance from the Campus Computer Council, the Director of Information Systems and Computing, and the Director of Communication Services are responsible for 1) the formation of TI Policy: 2) phone system policy formation and decision-making, and 3) wiring decisions.

The Computing Center, Communications Services, and the Office of Information Systems report to the Director of Information Systems and Computing who, in turn, reports to the Vice Chancellor for Administrative Services. Planning recommendations for wiring are the responsibility of the Director of Information Systems and Computing. Selection decisions fall to the Vice Chancellor for Administrative Services, with assistance from the Campus Computer Council. And operating decisions are the responsibility of the Director of Communication Services.The UCSB Library and computing facilities operate separately, with few links. However, the University Librarian serves on the Campus Computing Council.

### C. Computing/Information Systems Centered Model

Here C/IS has risen to a position on par with the highest positions in the academic affairs and administrative services spheres. In this model a Director of Information Services under the Senior Vice President or an Associate Vice President for Information Services are examples of the key officers. The Massachusetts Institute of Technology and Pennsylvania State University are presented as C/IS centered models.

At MIT, the formation of TI Policy is the responsibility of the Director of Information Systems who is under the direction of the Senior Vice President. The Office of Information Systems is subdivided into four divisions to provide stronger links among computing services for academic and administrative use, telecommunication services ranging from centralized telephones to sophisticated digital networks, and support services for the full range of information technology available at MIT.

The new divisions are: 1) Information Services which offers comprehensive support to administrative, research, and instructional computing users in areas of education and training, documentation, consulting, and contract programming and writing; 2) Telecommunication Systems which provides all telecommunications services, including the campus-wide computer and cable television networks; 3) Administrative Services which works with administrative organizations to design, develop or purchase, document and maintain the software needed for MIT's administrative operations; 4) Operations and Systems which provides operations and systems programming support to all centrally managed computers at MIT and offers facilities management services to other MIT organizations that operate computer facilities.

Campus wiring planning recommendations are the responsibility of the Director of Information Services, in conjunction with a Senior Research Scientist in the Laboratory for Computer Science. The Director of Telecommunication Systems is responsible for wiring selection decisions and the Data Communications Manager is in charge of wiring operating decisions. Both the Director of Information Systems and the Director of Telecommunication Systems are responsible for policy formation and decision-making related to MIT's phone system.

The MIT libraries and computing facilities are not formally related. They operate separately and the joint use of communications network and workstations is anticipated. The Director of Information Systems is an ex officio member of the Committee on the Library System. Ad hoc links exist at the planning, selecting, and operating levels between computing facilities and the libraries.

At Pennsylvania State University, the Executive Director for Computing and Information Systems and the Director of the Office of Telecommunications are responsible for the formation of TI Policy. The Director of the Office of Telecommunications reports to the Executive Director for Computing and Information Systems who, in turn, reports to the President of the university.

The Executive Director for C/IS and the Director of the Office of Telecommunications are responsible for campus wiring 1) planning recommendations, 2) selection decisions, 3) operating decisions, and 4) policy formation and decision-making relating to the university's phone system.

The library and the computing center operate as totally separate entities, but jointly use the university's communications network.

## D. Decentralized Model

Five illustrations are used to identify variations of decentralized models of TI Policy formation: the University of California at Los Angeles, Dartmouth College, Brown University, the University of California at Berkeley, and the University of Colorado at Boulder. The first displays decentralization of both communication systems and spheres of authority; the second is a similar example but on a smaller scale; and the third displays a dual centered model of decentralization. The final two are committee-based models.

### 1. Three Variations of Decentralization

At the University of California at Los Angeles, the formation of TI Policy is decentralized. Responses to the campus wiring questions and the TI Policy formation question are the same: Wiring decisions for voice, data, and video communication systems are the responsibility of different offices. While "voice" is in the administrative services sphere and "data" in the academic affairs sphere, responsibility for "video" is shared by academic affairs, administrative services, and by two committees.

VOICE. Planning recommendations for wiring are the responsibility of the Assistant Vice Chancellor for Business and the Director of Telecommunications, selection decisions are the responsibility of the Director of Telecommunications, and operating decisions are made by both the Director of Telecommunications and the Rates Advisory Committee. The Director of Telecommunications reports to the Assistant Vice Chancellor for Business who, in turn, reports to the Administrative Vice Chancellor.

DATA. Planning recommendations for data wiring are the responsibility of the Vice Chancellor for Research, the Director of the Office of Academic Computing, and the Academic Computing Advisory Committee. Selection decisions are handled by the Director of the Office of Academic Computing, and operating decisions are under the aegis of both the Director of the Office of Academic Computing and the Director of Academic Computing Facilities. The Director of Academic Computing Facilities reports to the Director of the Office of Academic Computing who, in turn, reports to the Vice Chancellor for Research.

VIDEO. The Assistant Vice Chancellor for Instructional Development, the Assistant Vice Chancellor for Business, the Instructional Improvement Committee, and the Chancellor's Committee on Instructional Technology are responsible for planning recommendations for video wiring. Selection decisions are made by both the Assistant Vice Chancellor for Instructional Development and the Assistant Vice Chancellor for Business. The Director of the Office of Instructional Development is responsible for operating decisions. The Director of the Office of Instructional Development reports to the Assistant Vice Chancellor for Instructional Development who, in turn, reports to the Vice Chancellor for Research.

The library and computing facilities at UCLA operate separately, with few formal links, but there is a close planning and working relationship. While the library does influence decisions about data communications, it has relatively little involvement with policies regarding voice communications.

Dartmouth is another example of a decentralized model for the formation of TI Policy. While data and video wiring decisions are in the academic affairs sphere, voice communication is under administrative services.

Campus planning recommendations for voice communications at Dartmouth are the responsibility of the Treasurer while both data and video are under the aegis of the Provost. Selection decisions for "voice" occur in the Purchasing Department, for "data" with Computing, and for "video" with Instructional Services. Operating decisions follow the same pattern as selection decisions for the three components of wiring. The Vice Provost for Computing is responsible for data TI Policy formation at Dartmouth. Both Instructional Services and the Vice Provost for Computing report to the Provost.

Dartmouth's library and computing facilities jointly use the college's communications network and workstations. The Librarian also reports to the Provost.

A third example of a decentralized model is that of Brown University. While wiring planning recommendations, selection decisions, and operating decisions are within the academic affairs sphere, the position responsible for the formation of TI Policy is the Senior Vice President for Administration and Finance. Wiring planning recommendations and selection decisions are the responsibility of the Vice Provost for Computing and operating decisions are the responsibility of the Director of Network Operations who reports to the Vice Provost for Computing. Brown's voice and data communications networks are separate.

At Brown, the library is currently a user of the local area network and with the establishment of the online catalog, the library computer will be a node in the network. The computer will be owned by the library, but will be housed in the computer center. The University Librarian reports to the Provost.

#### 2. Committee-based Model

A committee-based model in TI Policy formation is distinct from the other models in that the main sphere of influence and decision-making is a committee, which may have strong links to the three spheres, but which is not solely or primarily in one sphere or the other.

At the University of California, Berkeley, responses to both questions regarding the formation of TI Policy and wiring planning recommendations state that responsibility rests with a campus-wide committee, the Campus Communications Network Task Force. The Task Force includes representatives from the Computer Center, General Library, Department of Facilities Management, Telecommunications Department, Police

Department, Educational T.V., Campus Planning and Facilities. The Office of the Assistant Vice Chancellor for Information Systems and Technology is responsible for wiring selection decisions and the office responsible for operating decisions is to be determined, as the university is in the planning stage for voice and video wiring and its data wiring is in process. The Telecommunications Department is responsible for policy formation and decision-making regarding the university phone system.

The Assistant Vice Chancellor for Information Systems and Technology is responsible for Berkeley's network of computers and related services and serves as liaison between the campus computing community and campus administrators. This Assistant Vice Chancellor reports to the Vice Chancellor for Research who, in turn, reports to The Vice Chancellor. The University Librarian also reports to The Vice Chancellor.

At the University of Colorado at Boulder, there are two committees responsible for the formation of TI Policy: the Telecommunications Steering Committee and the Boulder Campus Computer Planning Committee. While both committees include the Director of Office Support Systems and Services, the Director of Telecommunications Services, other administrators, and faculty representatives, the library is not represented. Campus wiring for voice, data, and video at U. C. Boulder are in the planning stage, with an anticipated implementation in the Summer of 1986.

## E. The Use of Committees in Telecommunications Information Policy Formation

One might guess that there is broad involvement in TI Policy formation in universities and thus numerous committees; however, this is not evident from the survey. Only nine of the universities used committees of any type (e.g. university-wide) in the formation of TI Policy. It may be that university administrators do not realize the negative implications of TI Policy being formed on campus in relative isolation from the users.

## IV. Implications of Organizational Models

The traditions and organizational culture of an individual academic institution may make one model more appropriate than another in a given situation. Each model, of course, has benefits and liabilities; however, some generalizations can be made regarding their use.

A distinct benefit of any of the centralized models over the decentralized models is that one single office is responsible for TI Policy decisions and thus consolidates line management responsibilities. However, when an institution is in the very early stages of preparing TI policy, a decentralized model, such as the committee-based model, may be the most appropriate.

While the benefits of an administrative services centered model look appealing from the standpoint of operational clarity and the related operations within this sphere, the further the center of policy formation is from academic affairs the more problems may arise in meeting the needs of scholars and students. The academic affairs centered model strengthens the link between academic policy concerns, such as the needs of scholars and students, and the formation of TI Policy because both these areas of responsibility are within the same sphere of authority.

A strong case can be made for having the central focus for the C/IS sphere at the highest levels in an institution's hierarchy, thus focusing needed attention and resources on the work of these offices. However, the C/IS centered model may create tension within the organizational structure as this functional area is elevated from the administrative services sphere, where many computing centers reside, to a peer level with a Provost and a Vice President for Administration. Once viewed as a support service within the university, the C/IS sphere in this scenario competes at the highest levels of policy formation for the university's resources and attention.

Universities need to be guided by a belief in the benefits of university-wide telecommunications applications and must be deeply committed to achieving this goal in spite of obstacles. The difficult issues to be addressed cut across institutional boundaries and as a result require cooperation and negotiation at high political levels. At the very least, a broadly based advisory committee may be needed to form policy, although execution of a TI Policy program will require an office or individual within the university with traditional line responsibilities.

Expanding campus telecommunications seems to have two main phases: 1) the wiring of the campus; and 2) establishing policies and procedures for communication system use. There are a number of major issues which must be addressed in the second phase, including confidentiality and security, access, acquisition of new information and databases into the network, fees for use, quality control and standards, and ownership of intellectual property. The organizational structure of a university must aid not only the applications of telecommunications technology, but also the broader implications of change in the university. In both phases, the greatest breadth of involvement in policy formation should occur, and the library and computing facilities must be clearly in the midst of this policy formation.

## V. The Library in the Formation and Execution of Telecommunications Information Policy

The relationship among the three key spheres of authority in the formation and execution of TI Policy is intertwined, and the library -- most often within the academic affairs sphere -- is usually on the periphery, if not outside. With the establishment in many universities of separate computing/information systems offices which are outside the academic affairs sphere, the ties to the library should, at the minimum, come through committee participation. Formal arrangements for input and participation, such as committees, can ensure more balanced planning and policy formation. However, library participation on committees which deal with TI Policy formation does not appear to be widespread, and sole reliance on informal links does not ensure a strong position.

To effectively influence policy formation, the library must seek an active role. As a first step, a library should determine what offices are responsible for the formation of TI Policy and then establish formal links with those offices. A workable method is to encourage the creation of a university-wide committee for computing and information systems, which will take up issues related to both phases of expanding campus telecommunications. An example of such a committee is the University of Pittsburgh's Computing and Telecommunications Steering Committee. This committee reviews and acts on recommendations from the Executive Committee for Academic Computing, the Senate Committee on Computer Usage, the Advisory Committee for Administrative Information Systems, and the University Libraries. The Steering Committee has broad representation which includes the Provost's Office, the Office of the Executive Vice President, the Office of the Senior Vice President for the Health Sciences, the Office of Computing and Information Systems, the University Libraries, and the Office of Telecommunications.

The library also needs to become involved early in the TI Policy formation process. Otherwise, when issues vitally related to library operations arise, the perspective of the library will enter only after the fact, if at all. The beneficial role of library input in policy formation can be illustrated during university-wide discussions of information policy issues regarding access, confidentiality, security, acquisition of new databases, fees for system and data use, quality control and standards, and ownership questions.

Even if TI Policy formation is centered in the same sphere as the library, such as the academic affairs sphere, the library should seek involvement. In fact, greater exertion may be needed when TI Policy formation and the library are in the same sphere. Assumptions of involvement may in fact represent only, at best, the passing on of information.

To rely solely on involvement with university computing facilities may also be inadequate to ensure library involvement in policy formation. Even if the formation of TI Policy is centered in the C/IS sphere of the university, it is useful to know the scope of this sphere's authority and to make links with offices in other spheres as necessary.

It is uncertain how much will be lost if a university's library remains on the periphery of TI Policy formation. The consequences, however, are sure to create inefficiencies and quite probably great expense over time.

## APPENDIX 1 DETAILED SURVEY RESULTS ON STATUS OF CAMPUS WIRING

### 1. Status of Campus Wiring: Spring 1985 and Projections for 1986

**WIRED**

Brown University
Colorado State University
Dartmouth College
Pennsylvania State University
Syracuse University
University of California at Santa Barbara
Virginia Polytechnic Institute

**IN PROCESS**

University of Michigan
University of Minnesota
Massachusetts Institute of Technology
University of Pennsylvania (except video)
University of Pittsburgh
Queens University
Stanford University
State University of New York at Albany
Temple University
University of California at San Diego

Expected wiring implementation dates for those institutions which have indicated as such, on the survey:

University of Colorado: voice - Summer 1986; data - Summer 1986; video - Summer 1986

Guelph: voice - late 1985 to early 1986; data - mid 1986; video - no plans.

University of Illinois: voice and data - new system July 1986; video - wired.

University of Michigan: voice - March 1986; data - wired; video - March 1986.

University of Minnesota: voice - June 1, 1986: data - June 1, 1986; video - June 1, 1986.

Massachusetts Institute of Technology: voice - replacing existing phone system with PBX in 1986; data - linking dozens of existing networks to a campus spine in 1986; video - wired now.

University of Pennsylvania: voice - wired; data - in process late 1985 to 1987; video- no plans.

University of Pittsburgh: voice - phased cut over from Centrex to System 85 beginning 3/86; data - academic wired now, other in phases beginning 1/85; video - expected 6/86.

Queens University: voice - 1986; data - planned expansion 1986; video - wired.

Stanford University: voice - January 1986; data - January 1986 ; video - July 1986. PPTemple University: voice - December 1985; data - December 1985; video - December 1985.

U.C. San Diego: voice - June 1986; data - Sept. 1985; video - Sept. 1985. PPU.C. Berkeley: voice - planned; data - in process, prototype by January 1986, video - planned.

## APPENDIX 2 DETAILED SURVEY RESULTS ON WIRING DECISIONS

### A. Campus Wiring Planning Recommendations

Among all the respondents, areas in which decisions are made regarding campus wiring recommendations are almost evenly split between the spheres. Five universities indicate planning recommendations occurring in the computing/information systems sphere, four in the academic affairs sphere, and six in decentralized configurations (three of which were committee-based). Thus respondents overall indicate that planning decisions are more centralized than decentralized.

(NOTE: Not all responses could be properly assigned to authority spheres either because it was not clear or there was no answer. Thus the totals for various questions differ.)

### B. Campus Wiring Selection Decisions

Responses to the wiring selection question are quite similar to planning recommendation responses. Wiring selection decisions are made in the academic affairs sphere in four universities, three in the administrative services sphere, five in the C/IS sphere, and four in a decentralized configuration, one of which is committee-based.

Within individual institutions, only six of the 26 respondents indicate that selection decisions are made by the same individual(s) or office(s) that make(s) planning recommendations. No relationship between an institution's progress in wiring the campus (planning - in process - wired) and a particular sphere in the institution is evident. However, it appears from the data that institutions move away from a committee-based configuration for selection decisions.

### C. Campus Wiring Operating Decisions

By and large, operating decisions follow a similar pattern. Four universities make wiring operating decisions in the academic affairs sphere, five in the C/IS sphere, and three are decentralized. None are committee-based.

Nine of the respondents state that operating decisions are made by the same office(s) or individual(s) responsible for planning and selection. Responsibility for operating decisions follows an expected pattern and is most often located in positions subordinate to planning and selection decision-makers. There exist a variety of titles for communication systems operating decision-makers: from Director of Network Operations to Data Communications Manager. Several higher level positions, which may be either entirely or partially responsible for planning and selection, are responsible for operating decisions. Such offices include Telecommunications Services Department, Director of Telecommunications, and Vice Provost for Computing.

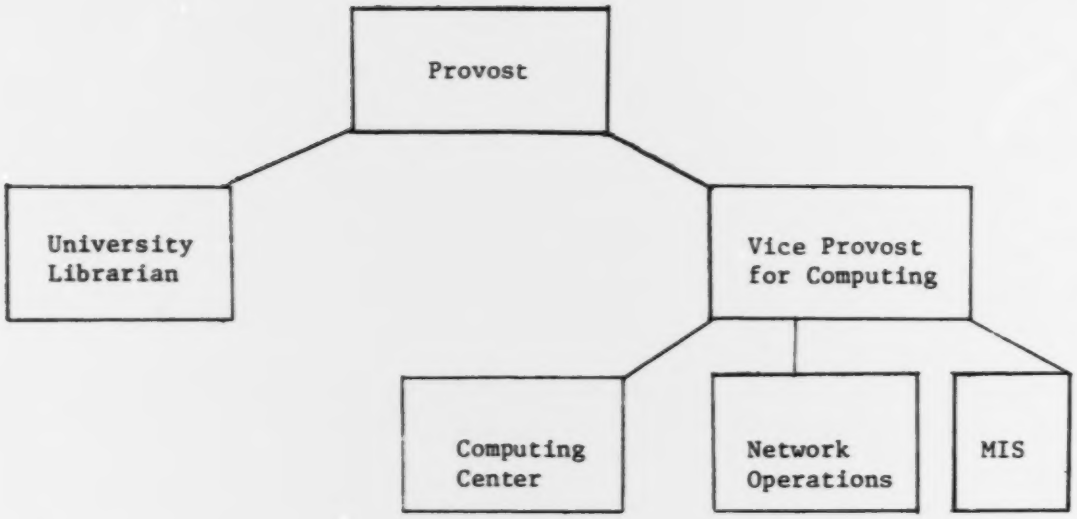
Twelve universities indicate that all three decision areas for campus wiring (planning, selection, and operating) are within the same sphere. Of these 12, three are in the academic affairs sphere, two in administrative services, four in C/IS, and three are decentralized. None are committee-based.

### D. Relationship of University Telephone System Policymakers to Telecommunications Information Policy Formation

Analysis of the survey responses indicates strong predominance of telephone system policy formation and decision-making responsibility in the administrative services sphere. Twelve universities state that this area of responsibility is in the administrative services sphere, five in the C/IS sphere, and two in the academic affairs sphere. Thus respondents overall indicate that phone system decisions are more centralized than decentralized.

It is interesting to note the variation in response to this question compared with wiring questions. While telephone policy and decision-making rests in the administrative services sphere for 12 universities, only four universities respond that wiring planning decisions are made by administrative services.

## APPENDIX 3
## UNIVERSITY ORGANIZATION CHARTS


Provost
University Librarian
Vice Provost for Computing
Computing Center
Network Operations
MIS

# The organization of the Berkeley Campus

**Chancellor of the Berkeley Campus**
**Ira Michael Heyman**

**The Vice Chancellor**
**Roderic B. Park**

Acts for the chancellor in his absence. Responsible for all academic programs including the libraries, UC Extension, the University Art Museum, Summer Session, and the Campus Planning Office. Also responsible for faculty and student affirmative action including cooperative programs with high schools and community colleges. Also consults with the Academic Senate and student groups concerning changes in academic policies and curriculum.

**Vice Chancellor-Development**
**Curtis R. Simic**

Responsible for campus-wide development, policy determination, and the creation of mechanisms through which funding priorities are set. As President of the UC Berkeley Foundation, responsible for the involvement of the board and volunteers in campus fundraising efforts.

**Vice Chancellor-Business and Administrative Services**
**Ronald W. Wright**

Responsible for business and administrative services including employee affairs, facilities management, financial services, housing, food services, child care, police services, material management, environmental health and safety, management analysis, staff affirmative action, and communication and transportation services.

**Vice Chancellor Undergraduate Affairs**
**W.M. Lootsok**

Collaborates with other academic administrators in improving undergraduate curricula and instruction. Responsible for 23 units which support and enrich undergraduate students' educational experiences. Responsible for undergraduate student affirmative action programs. Oversees directly the Instructional Technology Center; intercollegiate athletics programs for men and for women; the Lawrence Hall of Science; the Student Health Service; the Student Research Office; the Teaching Innovation and Evaluation Services; and various instructional improvement activities sponsored by the Academic Senate.

**Dean-Graduate Division**
**William A. Shack**

Responsible for admissions, financial aid, and the quality of over 100 graduate programs. Supervises 17 organized research units. Has the most central faculty role in safeguarding standards of excellence in advanced education at Berkeley.

**Vice Chancellor-Research**
**Chang-Lin Tien**

In cooperation with the Academic Senate, responsible for establishing campus policy and services related to academic research. Supervises the Sponsored Projects Office and the Office of Computing Affairs. Implements campus and national policies on animal care and human subjects research.

**Provost & Dean-College of Letters & Science**
**Leonard V. Kuhi**

Responsible for 42 departments within the College of Letters & Science including the biological sciences, physical sciences, humanities, and social sciences. Also oversees the division of special programs and the division of freshman and sophomore studies, the Department of Ethnic Studies, ROTC, Subject A, international education, and 14 organized research units. As dean, is the final level of student appeal within the college.

**Provost-Professional Schools & Colleges**
**Doris H. Calloway**

Responsible for the programs of four professional colleges (chemistry, environmental design, engineering, and natural resources), nine professional schools (business administration, education, journalism, law, library and information studies, optometry, public health, public policy, and social welfare), 15 organized research units, and the Energy and Resources Group.

**University Librarian**
**Joseph A. Rosenthal**

Responsible for overseeing the largest academic library system in the western United States which includes the Main Library, Moffitt Undergraduate Library, the Bancroft Library, and 23 branch libraries. Collections include 6 million volumes, 42 million manuscripts and archival documents, maps, music scores, and papyri.

**Assistant Vice Chancellor - Undergrad Affairs**
**Roberto P. Haro**

Oversees the Career Planning and Placement Center, the Counseling and Psychological Services, the Disabled Students' Program, the Educational Television and Radio Office, the Student Learning Center, and the Women's Center.

**Assistant Vice Chancellor - Undergrad Affairs**
**S. Thomas Travers**

Oversees the Academic Preparation and Articulation Office, the Admissions and Records Office, the Advisors to Foreign Students and Scholars Office, the Financial Aid Office, the Relations with Schools Office, the Recreational Sports Depart-

**Assistant Vice Chancellor - Info. Systems & Technology**
**Raymond K. Neff**

Responsible for Berkeley's network of computers and related services, which is one of the largest at any campus and rapidly expanding. Also serves as a liaison between the campus computing community, campus administrators, and various out-

**Assistant Vice Chancellor-Facilities Mgmt.**
**Thomas G. Hycum**

Responsible for the $1 billion physical plant of the campus, including the direction of building maintenance; energy management; landscaping; custodial and grounds services; and capital construction.

**Assistant Vice Chancellor Ombudsperson**
**Francis X. Small**

Acts as a mediator and provides staff employees on campus with a confidential, impartial, and informal means of resolving their work-related problems. Identifies staff concerns and works with the administration to create solutions. Also responsi-

**Assistant Vice Chancellor-Financial Services**
**Selime C. Raol**

Serves as the chief accounting officer for the campus. Responsible for the fiscal administration of all campus programs and activities. Oversees the offices of Accounting, Cashier's, and Student Loan Collections and Disbursements.



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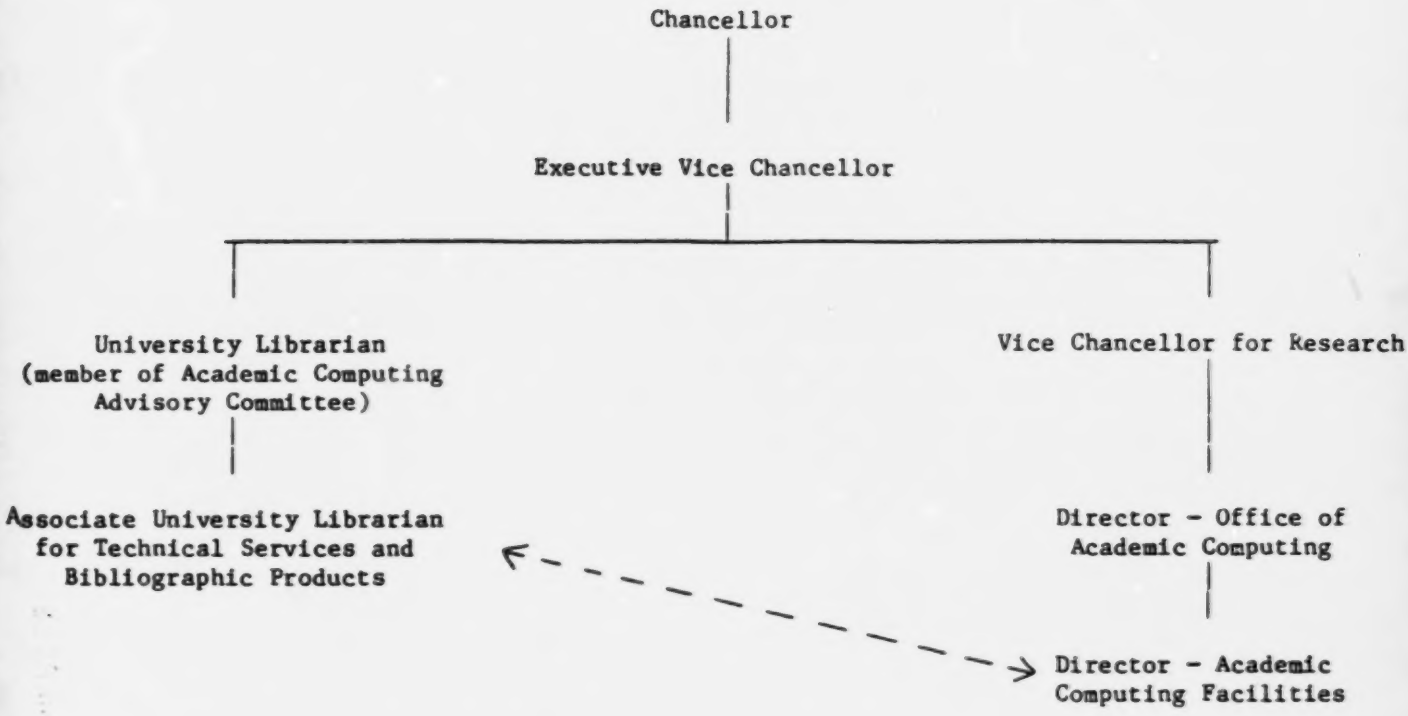
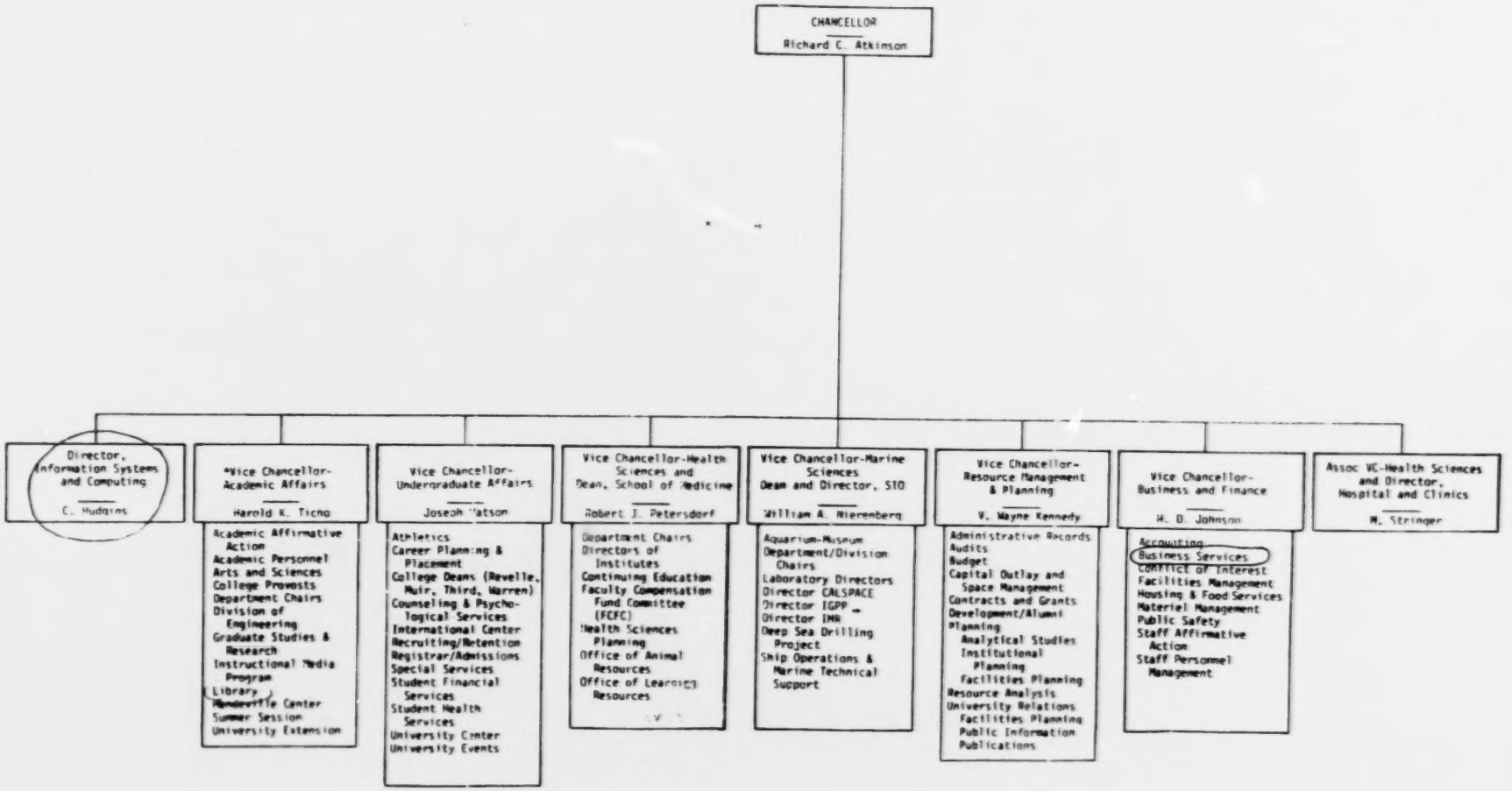
QUESTION 2


Chancellor
Executive Vice Chancellor
University Librarian
(member of Academic Computing
Advisory Committee)
Vice Chancellor for Research
Associate University Librarian
for Technical Services and
Bibliographic Products
Director - Office of
Academic Computing
Director - Academic
Computing Facilities
← - - - → Frequent communication in regard to planning and operations

## UCSD ADMINISTRATIVE ORGANIZATION CHART




*Acts for the Chancellor in his absence.



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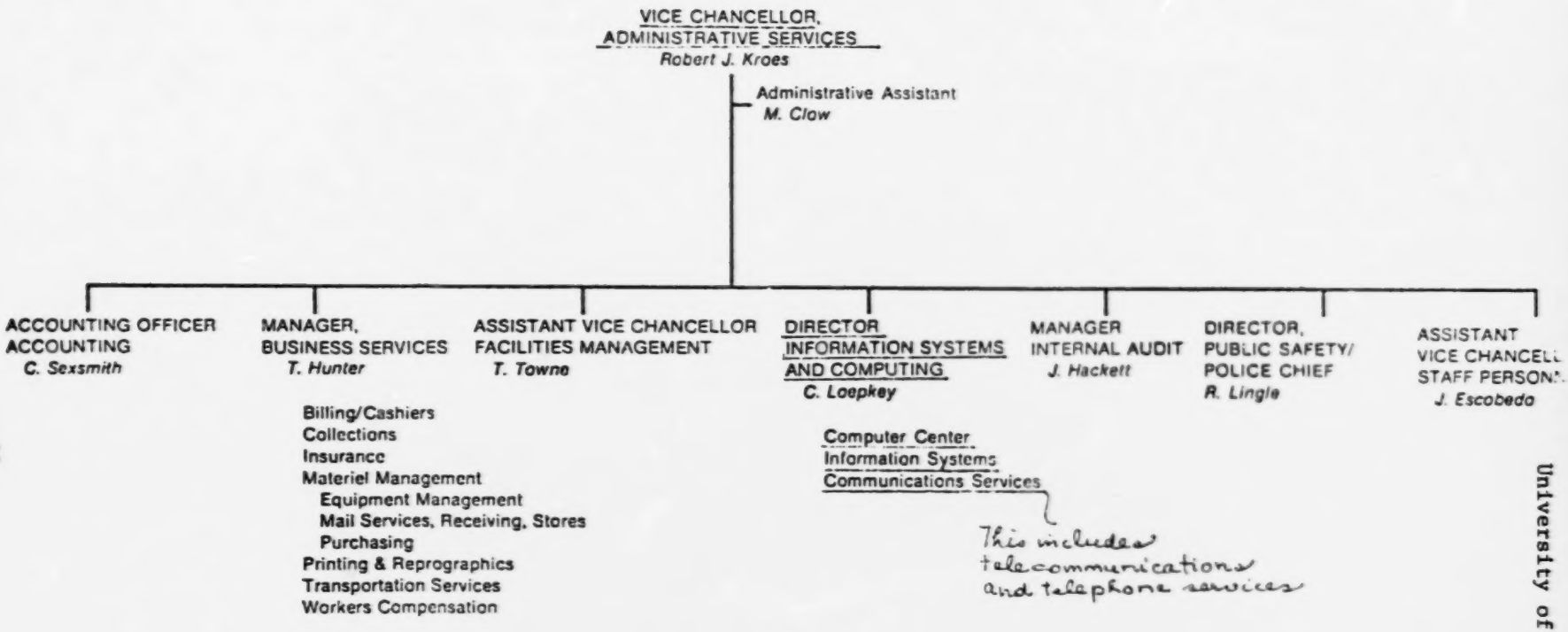
UNIVERSITY OF CALIFORNIA
SANTA BARBARA CAMPUS
VICE CHANCELLOR,
ADMINISTRATIVE SERVICES
January 1, 1985

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University of California, Santa Barbara

35

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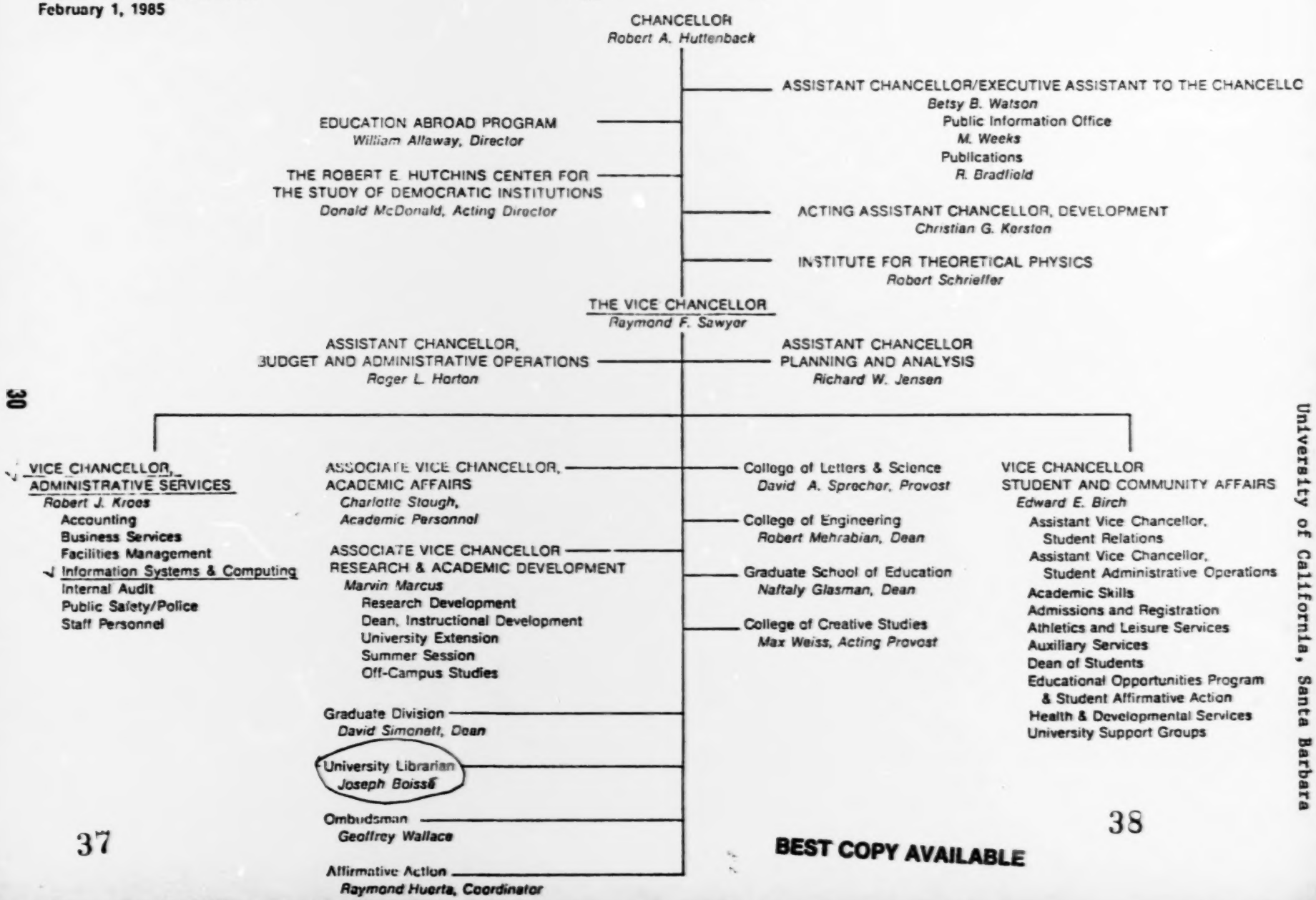
36

**UNIVERSITY OF CALIFORNIA**
**SANTA BARBARA CAMPUS**
**February 1, 1985**




30

University of California, Santa Barbara





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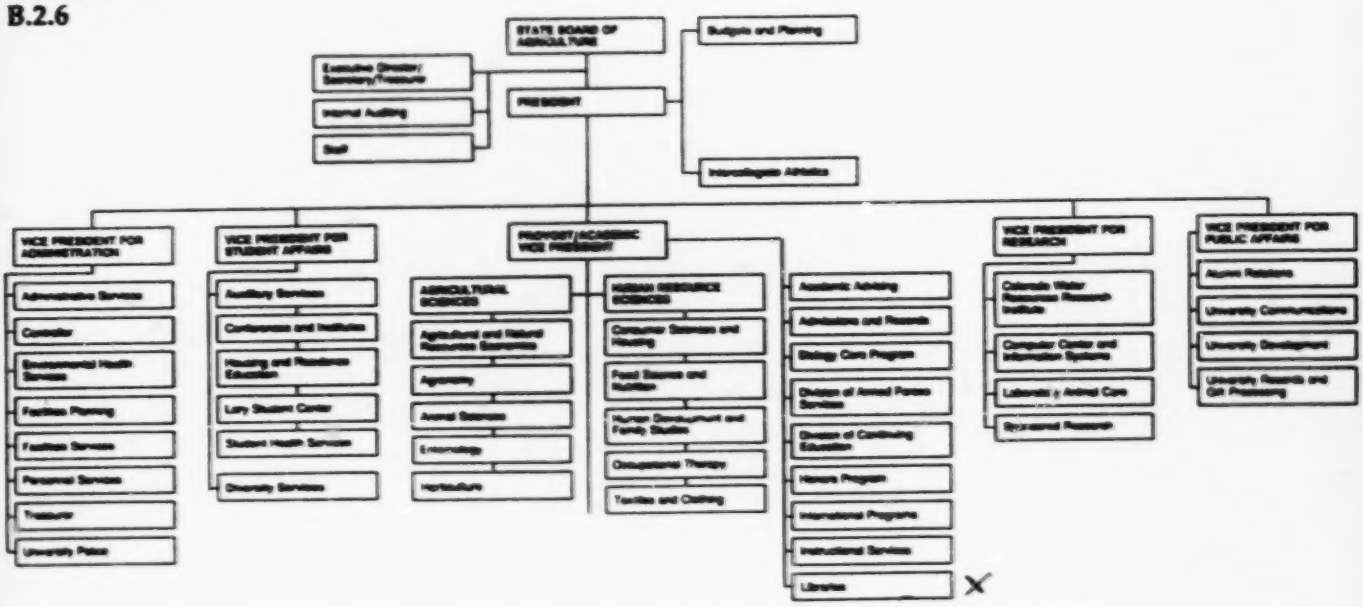
**COLORADO STATE UNIVERSITY ORGANIZATION CHART**
**B.2.6**



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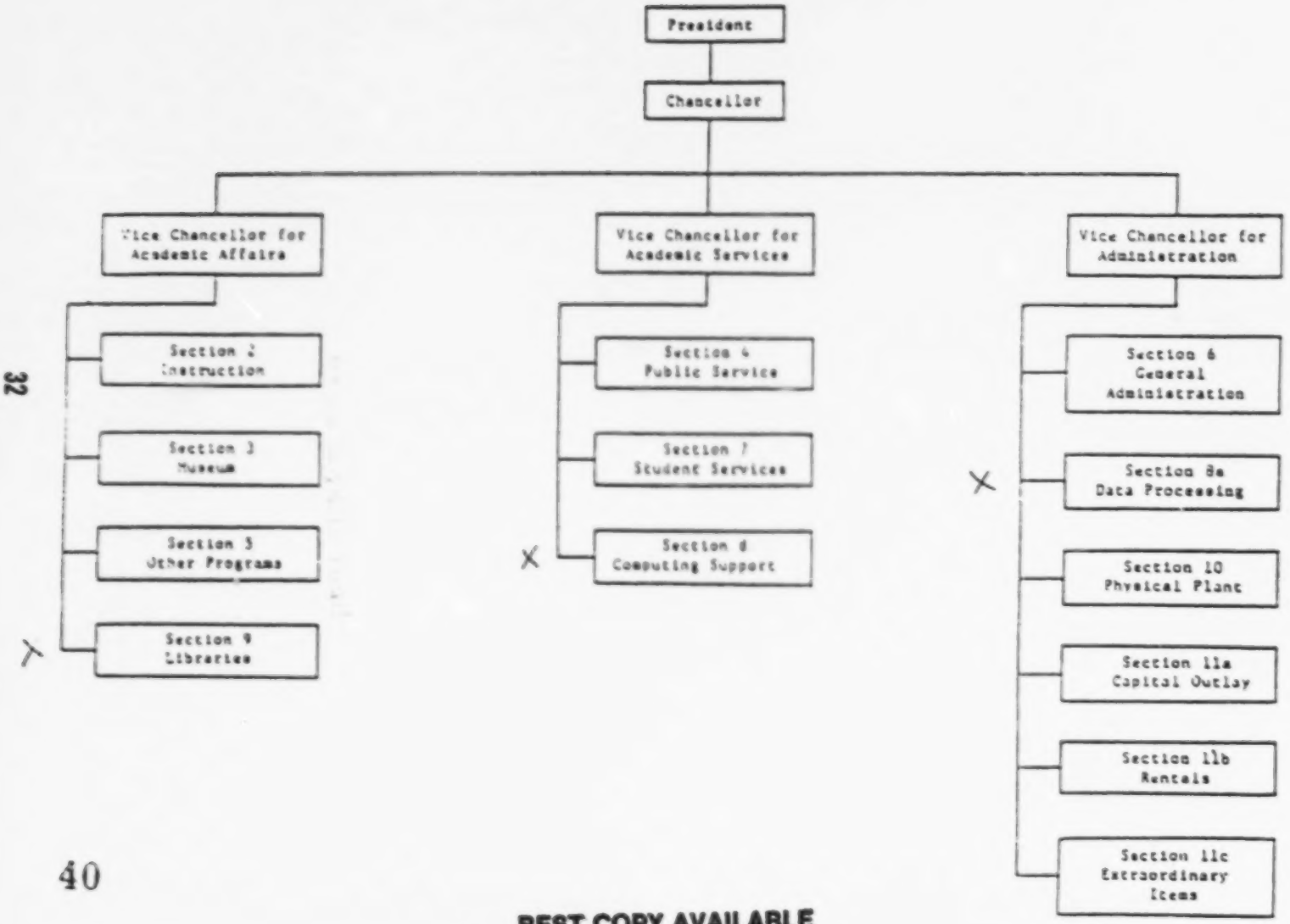
Section I

University of Colorado

Boulder Campus



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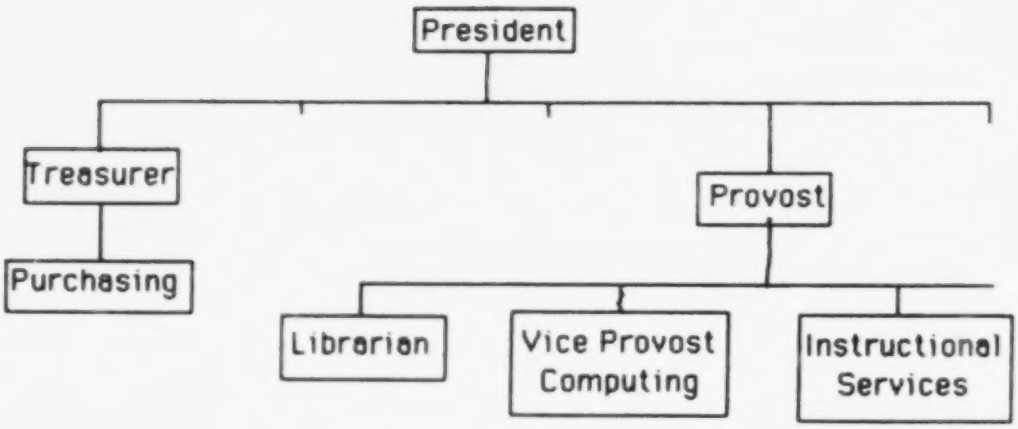
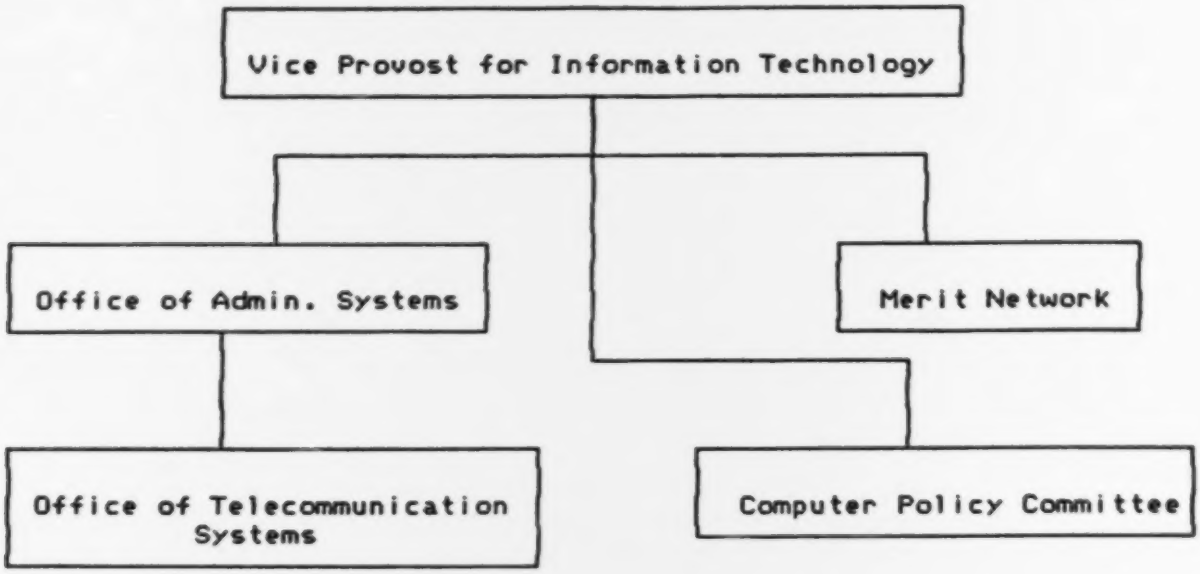
**Dartmouth College**
**Organization**

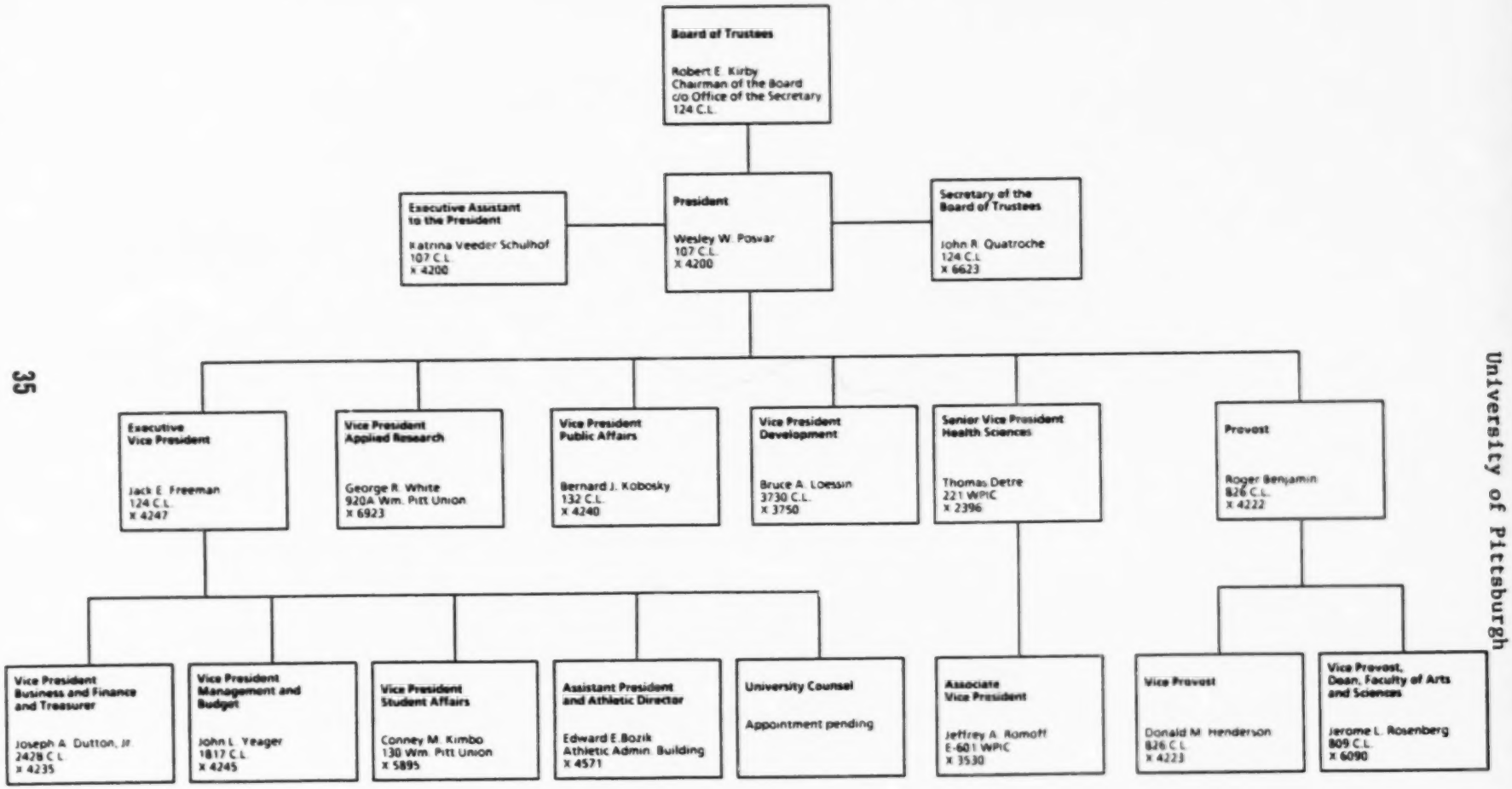


3. Computer Policy Committee
   Office of Telecommunications Systems
   Vice Provost for Information Technology
   Director of the Merit Network




4. Vice Provost for Information Technology
   Director of Administrative Systems
   Director of the Merit Network
   Director of Telecommunication Systems

# UNIVERSITY ADMINISTRATION

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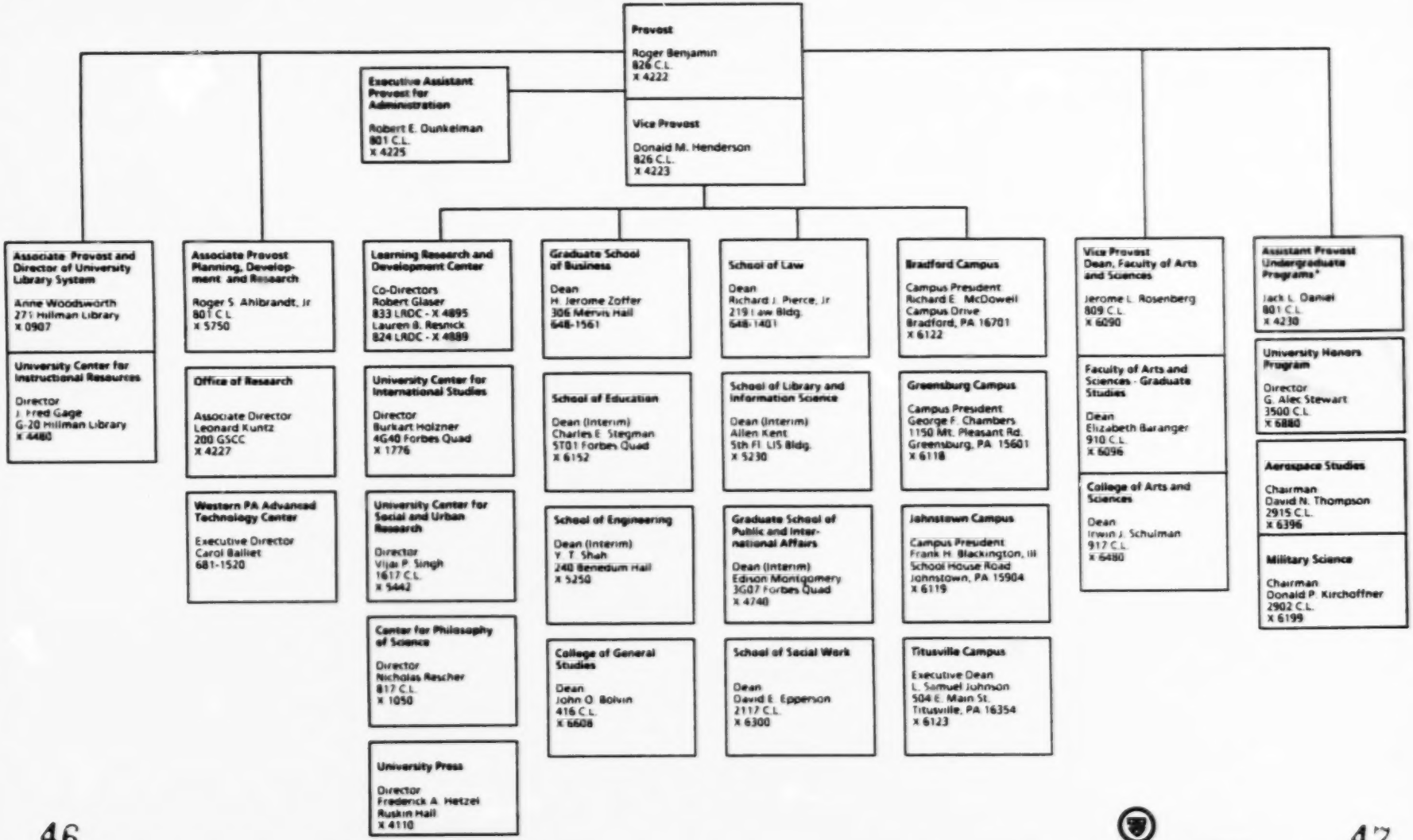
University of Pittsburgh

September 1985



University of Pittsburgh

# OFFICE OF THE PROVOST




*Includes Evaluation of Teaching (X 6147), Faculty Development (X 6594) and Measurement and Evaluation (X 6448).

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**APPENDIX 4**
**SURVEY FORM:**
**Study of Telecommunications Information Policy Planning**

**OFFICE OF MANAGEMENT STUDIES**

ASSOCIATION OF RESEARCH LIBRARIES 1527 New Hampshire Avenue, N.W., Washington, D.C. 20036 • (202) 232-8656

TO: SPEC Liaisons, Selected ARL Institutions April 5, 1985

FROM: SPEC Center, Ken Flower/Collaborative Research-Writer
and Maxine Sitts

RE: Study of Telecommunications Information Policy Planning

Your institution is one of 36 ARL members identified from a literature review as being interested or active in the implementation of telecommunications technology at your university. We are asking your assistance in a research project leading to an OMS Occasional Paper.

The implementation of state-of-the-art telecommunications technology -- such as the establishment of local area networks -- on many campuses is causing universities to reexamine their organizational structures. This study is investigating developments in this area, to identify patterns or models of telecommunications information planning and decision-making. The focus of the study is to determine how telecommunications information policy questions are resolved, and by whom. A prime focus will be the role of the library and university computing facilities in this policy formation.

Your responses to the following few questions will be helpful as we begin the study. We encourage you to discuss the questions with the library director, since some of them involve university-wide issues. We will be contacting several of you by telephone after we receive survey returns the end of this month. If you have questions, please do not hesitate to call Ken Flower at 301 338-8325 (Milton S. Eisenhower Library, Johns Hopkins University).

1. What is the current status of your university regarding wiring for the transmission of voice, video, and data communication? (Check appropriate status for each, and provide date where applicable.)

| | NOT WIRED | WIRED | IN PROCESS | PLANNED | (Actual or Expected Date of Implementation) |
|---|---|---|---|---|---|
| VOICE | _____ | _____ | _____ | _____ | _____ |
| DATA | _____ | _____ | _____ | _____ | _____ |
| VIDEO | _____ | _____ | _____ | _____ | _____ |

What positions are responsible for making decisions related to wiring your university (please indicate titles)

Planning recommendations _____

Selection decisions _____

Operating decisions _____

2. Which of the following most closely describes the relationship of library and computing facilities at your university?

_____ Operate separately, with few links
_____ Jointly use communications network and workstations
_____ Combined organizationally and operationally
_____ Other (briefly describe) _____

_____

_____

Please provide an organization chart of your university that identifies the relationship of the library and university computing facilities, or elaborate below.

3. What position, office, or committee(s) are responsible for the formation of telecommunications information policy at your university? Indicate titles, positions below.

_____

_____

Please provide an organization chart that includes the above, or indicate below to whom they report, and their place in the organization.

4. What position at your university is responsible for policy formation and decision-making relating to the university phone system? (Please indicate titles)

_____

_____

5. Which phrase best describes, in your opinion, your university's goals for staging information technology developments.

_____ Technological leader
_____ Early follower
_____ Casual follower
_____ Other_____

Amplify or explain below, if you wish.

6. Please indicate if your library is willing to participate in a more in-depth telephone interview relating to how telecommunications information policy is determined at your university?

_____ YES (Best time to call is_____).

NAME OF RESPONDENT_____

INSTITUTION/LIBRARY_____

TELEPHONE (A.C.)_____

We welcome documents associated with the issues addressed in this survey. Please return them and this initial inquiry by April 30, 1985 to Kenneth Flower, Library Administration, Milton S. Eisenhower Library, Johns Hopkins University, Baltimore, MD. 21218. We appreciate your assistance with this project, and we look forward to contacting you in the next few weeks.

## AUTHOR'S ACKNOWLEDGEMENTS

I wish to acknowledge the kind assistance of the following individuals.

Amira L. Aaron, Massachusetts Institute of Technology
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Donna Dzierlenga, University of California at Los Angeles
Emily Gallup Fayen, University of Pennsylvania
Stuart Forth, Pennsylvania State University
Don Hale, University of California at San Diego
Bernard J. Hurley, University of California at Berkeley
Lies Jaccarino, University of California at Santa Barbara
Phyllis E. Jaynes, Dartmouth University
Joe Jezukewicz, Stanford University
Donald G. Kelsey, University of Minnesota
George H. Libbey, Temple University
Joan McConkey, University of Colorado, Boulder
David R. McDonald, University of Michigan
R.W. MacDonald, University of British Columbia
Susan K. Martin, Johns Hopkins University
Jo-Ann Michalak, University of Pittsburgh
Dale S. Montanelli, University of Illinois at Urbana-Champaign
Howard Pasternack, Brown University
Ellen Pearson, University of Guelph
Maxine Sitts, Office of Management Studies/ARL
Thomas A. Souter, Virginia Polytechnic Institute
Duane Webster, Office of Management Studies/ARL
John C. Wyman, Syracuse University
Selwen Zerof, University of Kentucky

## SUGGESTED READING LIST AND REFERENCES


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